



Stormwater Management Filtration System Plan Review Checklist

Sediment Control Permit No. _____

SUPPORTING INFORMATION (One Copy)

- _____ Stormwater Management Easement and Maintenance Covenant
- _____ Itemized Stormwater Management Construction Estimate.
- _____ Storm drain plans for any areas not draining directly to the facility (must show safe structural conveyance).

SOILS INVESTIGATION

- _____ Geotechnical report
- _____ Minimum boring locations: a minimum depth of 4 feet below proposed bottom of facility and for infiltration at least one every 50 linear feet
- _____ USDA textural classification for various layers, with depth
- _____ Depth to the seasonal high groundwater and bedrock (proposed bottom of facility to be a minimum of 4 feet above both)
- _____ Fill areas identified
- _____ In-place percolation test (for infiltration only)

FILTRATION COMPUTATIONS

- _____ Drainage area to the facility
- _____ Volume of storage required and provided
- _____ Submit flow splitter computations (if applicable)
- _____ Correct determination for compliance with MD-378. For facilities subject to MD-378, reference MCDPS Pond Plan checklist

For Infiltration

- _____ Use .40 void ratio for gravel
- _____ Use 3-inches/hour maximum infiltration rate for computations regardless of actual percolation rate. For rates that are exceedingly high (>10-inches/hour) investigate use of alternative filtration practice
- _____ Maximum depth determination
- _____ Facility dimensions

For Sand Filtration and Biofiltration

- _____ Minimum surface area of filter
- _____ Facility dimensions

- ____ ____ ____ For structural sand filters, use .40 void ratio for sand
- ____ ____ ____ Structural computations. Comps must be signed/sealed by a registered professional engineer with all assumptions noted in the comps
- ____ ____ ____ Storage computed above the sand for surface sand filter
- ____ ____ ____ **For Stormfilters**
- ____ ____ ____ Copy of the sizing computations sent to Stormfilter

STORMWATER MANAGEMENT PLAN

A. **PLAN VIEW OF FILTRATION FACILITY**

- ____ ____ ____ Existing and final contours (1-foot or 2-foot interval)
- ____ ____ ____ Existing and proposed improvements with elevations
- ____ ____ ____ Location of test borings
- ____ ____ ____ Existing and proposed utility location/protection
- ____ ____ ____ Delineation of easement area around the filtration facility and filter devices/areas... Include flow splitters and outfalls. Minimum 10-foot clearance around the facility.
- ____ ____ ____ Access to a public right-of-way (minimum 12-feet wide)
- ____ ____ ____ Location and clear access to the observation well(s)
- ____ ____ ____ Safe building locations and basements (minimum 10-feet away)
- ____ ____ ____ Safe conveyance of filtration overflows ...storm drain outlet(s) should be located away from overflow outlet
- ____ ____ ____ Method for preventing construction sediment from entering the facility
- ____ ____ ____ Method for permanent filtering of runoff prior to entry into the facility (ie. Outlet to a grass buffer or swale for pre-treatment)
- ____ ____ ____ Inflow improvements (appropriate details required)
- ____ ____ ____ Non erosive outfalls provided (appropriate details required)

For Stormfilters

- ____ ____ ____ Show correct location and angle of incoming and out going pipes
- ____ ____ ____ Show correct number of canisters
- ____ ____ ____ Ladder must be shown with clear access to the floor
- ____ ____ ____ Type of material in canisters

B. **CROSS-SECTION AND PROFILE THROUGH FILTRATION FACILITY**

- ____ ____ ____ Existing and proposed grade specific to each facility
- ____ ____ ____ Observation well/cleanout location(s) (centered)

_____ Watertight, removable cap on observation well/cleanout

For Infiltration Trenches

_____ Trench depth – give elevations and inverts

_____ Gravel size: 1 – ½ to 3 inch; clean, washed material

_____ 6-inches of clean, washed sand (ASTM C-33) on bottom of trenches

_____ Provide 12-inch pea gravel surface layer. Use Mirafi 140-N or DPS approved equivalent between pea gravel and 1 ½ - 3 inch gravel

_____ Filter cloth specifications (ie. Mirafi 140N or DPS approved equivalent) and location (top and sides of facility only)

_____ Storm drain system connection (if applicable)

_____ Top of trench open to surface

_____ Embankment side slopes labeled and top width clearly shown (3:1 side slopes, 4-foot minimum top width)

_____ Landscape plan prepared by a landscape architect registered in the state of Maryland.

For Surface Sand Filters

_____ Facility depth – give elevations and inverts

_____ Filter media specification – ASTM C-33 fine aggregate concrete sand (washed), MSHA #7 gravel

_____ Location(s) of 6-inch PVC underdrain and associated cleanouts with perforated vs non-perforated sections clearly shown along with length, spacing and slope

_____ Underdrain to be Sch. 40 PVC with a minimum of 6-inches of gravel above the pipe, 3-inches of gravel below the pipe

_____ Underdrain perforated with 3/8-inch diameter holes at 4-inches on center every 90 degrees. Perforated sections within gravel layer only

_____ Embankment side slopes labeled and top width clearly shown (3:1 maximum side slopes, 4-foot minimum top width)

_____ Core trench around underdrain and underneath embankment fill clearly labeled (bottom width 2-feet minimum, side slopes 1:1 maximum, depth 2-feet minimum)

_____ Anti-seep collar location shown for the underdrain (if required). Anti-seep collar not required for underdrains ≤ 6-inch diameter

_____ Outfall protection shown, including dimensions, slope (0.00%), and median rip rap size (d_{50}), thickness, approved filter fabric or geotextile as appropriate

_____ Elevations (including required freeboard) for top of dam, 10-year WSEL, water quality storage, riser/weir crest and top of sand filter. Weir crest to be located at existing ground or in cut

_____ Freeboard: top of dam minimum 1-foot above 10-year WSEL with overflow weir or 1-foot above 10-year HGL at flow splitter when no weir is provided

_____ Storm drain system connection shown (flow splitter and main line connections)

_____ For surface sand filters subject to MD-378 – reference MCDPS Pond Plan Checklist

____ Landscape plan prepared by a landscape architect registered in the state of Maryland.

For Structural Sand Filters

____ Facility depth – give elevations and inverts

____ Filter media specification: clean ASTM C-33 fine aggregate concrete sand, MSHA #7 gravel

____ Location(s) of 6-inch PVC underdrain and associated cleanouts with perforated vs non-perforated sections clearly shown along with the length and spacing

____ Underdrain to be Schedule 40 PVC with a minimum of 6-inches gravel cover above the pipe

____ Underdrain perforated with 3/8-inch diameter holes at 4-inches on center every 90 degrees. Perforated sections within gravel layer only

____ Geotextile fabric provided between the top gravel layer and the sand layer. Use Tensar TM-3000, Enkamat 7020 or DPS approved equivalent.

____ Length and width of settling area, filter area, and clearwell area

____ Storm drain system connection shown (flow splitter and main line connections)

____ Safe bypass of overflows

____ Elevations of 10-year WSEL, water quality storage and top of filter

____ Facility must be designed by a licensed structural engineer. Copy of structural computations provided and signed structural certification on plan

____ Facility provides adequate accessibility and headroom for maintenance (personnel access manholes, removable grates or doors, and steps provided)

For Biofiltration

____ Maximum drainage area to a single facility between 0.25 and 1 acre. Multiple facilities required for drainage areas greater than 1 acre

____ Facility depth – give elevations and inverts

____ Filter media: mulch layer, planting media, sand windows, with appropriate dimensions noted

____ Planting soil noted as 1/3 perlite or solite, 1/3 compost, 1/3 onsite soil

____ Location(s) of 6-inch SCH 40 PVC underdrain and associated cleanouts with perforated vs non-perforated sections clearly shown along the length with a minimum of 6-inches of gravel above the pipe, 3-inches of gravel below the pipe

____ 12-inch maximum ponding depth

____ Storm drain system connection shown

____ Safe bypass of overflows

____ Embankment side slopes labeled and top width clearly shown (3:1 maximum side slopes, 4-foot minimum top width)

____ Elevations for top of berm (provide minimum 6-inches freeboard between water quality storage elevation and top of berm), 10-year WSEL, water quality storage elevation, riser/weir crest and top of biofiltration facility

____ Landscape plan prepared by a landscape architect registered in the state of Maryland.

For Stormfilters

____ ____ ____ Provide all elevations and dimensions

C. **MISCELLANEOUS ITEMS**

____ ____ ____ Appropriate construction specifications

____ ____ ____ Inspector checkoff list (specific to each facility)

____ ____ ____ Seepage analysis if required

____ ____ ____ Sealed by P.E. (structural P.E. also where required) with signature and date.

____ ____ ____ MCDPS Turf Reinforcement detail on plan

____ ____ ____ MCDPS Shallow Facilities Specifications on plan